Message

From: Bo Stewart [Bo@praxis-enviro.com]
Sent: 5/23/2017 7:10:17 PM
To: Dan Pope [DPope@css-inc.com]; d'Almeida, Carolyn K. [dAlmeida.Carolyn@epa.gov]; Cosler, Doug [Doug.Cosler@TechLawInc.com]; Davis, Eva [Davis.Eva@epa.gov]; Brasaemle, Karla [Karla.Brasaemle@TechLawInc.com]; Wayne Miller [Miller.Wayne@azdeq.gov]; Jennings, Eleanor [Eleanor.Jennings@parsons.com]; Steve Willis [steve@uxopro.com]
Subject: Re: ST12 response

Hi Carolyn,

I would go with the middle ranges highlighted below (higher mass/higher mass transfer and lower mass/lower mass transfer) and let the UWBZ go out to 200 years based on the highlighted note. You might also mention that the UWBZ has 3 to 5 times more mass remaining than the LSZ. So,

UWBZ: 100 to 200 years

LSZ: 30 to 50 years

Table ES1. TOR for NAPL Depletion with Sulfate Reduction

Aquifer Zone – Kinetics	Mass Transfer Coefficient, k_M 1/day	Calculated Target NAPL Volume Porosity=0.3 years	Calculated Target NAPL Volume Porosity=0.4 years	Literature Target NAPL Volume Porosity=0.3 years	Literature Target NAPL Volume Porosity=0.4 years
UWBZ – 1st Order	0.05	18.9	12.7	22.0	22.4
UWBZ – 1st Order	0.0042	58.2	37.6	68.2	69.1
UWBZ – Monod	0.05	92	84	102	126
UWBZ – Monod	0.0042	133	111	152	178
LSZ – 1st Order	0.05	15.7	10.8	30.7	33.3
LSZ – 1st Order	0.0042	51.1	33.3	103	110
LSZ – Monod	0.05	13.2	9.4	28.0	36.1
LSZ – Monod	0.0042	52.4	36.2	104	116

Notes: First order degradation rate constant of 0.0125 d^{-1}, assumed to be applicable for all time independent of sulfate concentration and biomass conditions.

For a background death rate of 0.001 d^{-1}, the microbial population did not grow in the UWBZ, the injected sulfate was not utilized, and the TOR was over 200 years based primarily on the dissolved phase exiting the source soil volume. For the UWBZ, the background microbial death rate was set to 0 to allow the biomass to grow slowly (limited by the utilization rate); very little of the injected sulfate was utilized.

In the LSZ, the initial distribution of excess sulfate (8,000 mg/L) was utilized or washed out of the soil volume in 3 to 4 years; however, the microbial concentration grew and utilized ambient sulfate entering the volume to complete the process along with dissolved mass flowing out of the volume.

On 5/23/2017 11:49 AM, Dan Pope wrote:

WAFB Conference Call (5-23-2017) Notes

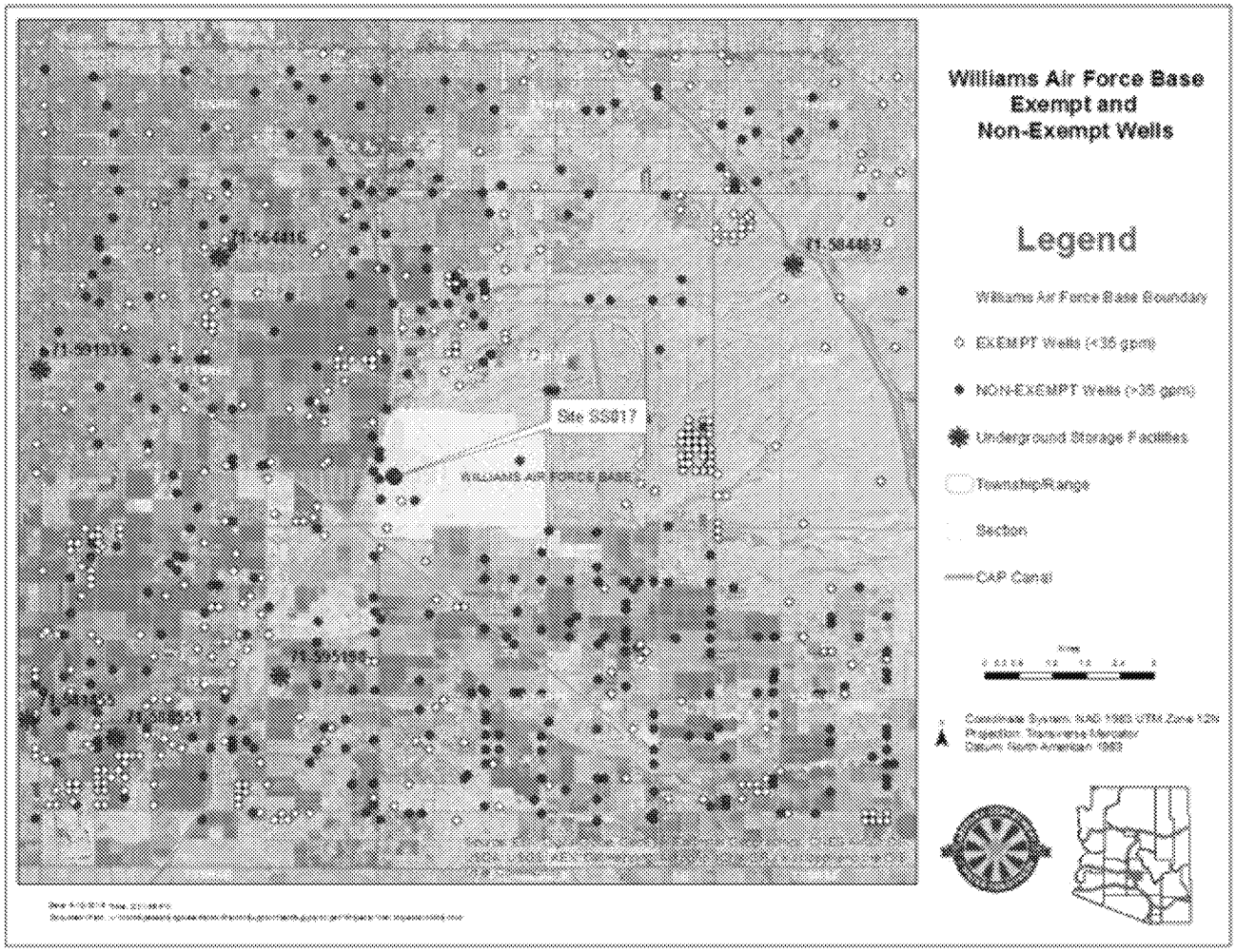
Large masses of LNAPL, with benzene and other COCs, remain at the Site.
EPA/AZDEQ estimates of LNAPL/COC mass are somewhat larger than AF/AMEC estimates.
AF/AMEC estimates of EBR efficacy and timeframes for stripping LNAPL of COCs and bringing GW to COC levels less than Site goals are based on their modeling efforts, which are:

1. <!--[if !supportLists]--><!--[endif]-->poorly documented (and therefore it is difficult to thoroughly analyze the appropriateness of the AF/AMEC modeling effort),
2. <!--[if !supportLists]--><!--[endif]-->based on problematic assumptions about Site conditions,
3. <!--[if !supportLists]--><!--[endif]-->based on optimistic assumptions mass flux of COCs from LNAPL into GW, and
4. <!--[if !supportLists]--><!--[endif]-->based on optimistic assumptions about biodegradation rates of COCs in GW

Because the AF/AMEC modeling of EBR/MNA is simplistic, poorly documented, and optimistic in assumptions, AZDEQ has developed detailed and site-specific (i.e., using site-measured parameters, rather than assumptions and literature values) modeling and analysis efforts for mass flux of COCs from LNAPL into GW, and enhanced biodegradation of COCs in GW. AZDEQ modeling and analysis indicates that the TOR is likely to be much longer than estimated by AF/AMEC.
Also, there are water supply wells within 4 miles (or even closer) of the Site. Impact on these wells from Site COCs is potentially highly adverse. Currently there are no data (i.e., GW COC concentrations along the way to the public water supply wells, and in the wells), and no modeling to show how COCs might move to the wells, and the timeframe involved.

If AF/AMEC moves ahead with full-scale implementation of EBR, within a year or two of implementation LNAPL (not just GW!) at the Site should show evidence of strong depletion of COCs (20% or more). And so on….

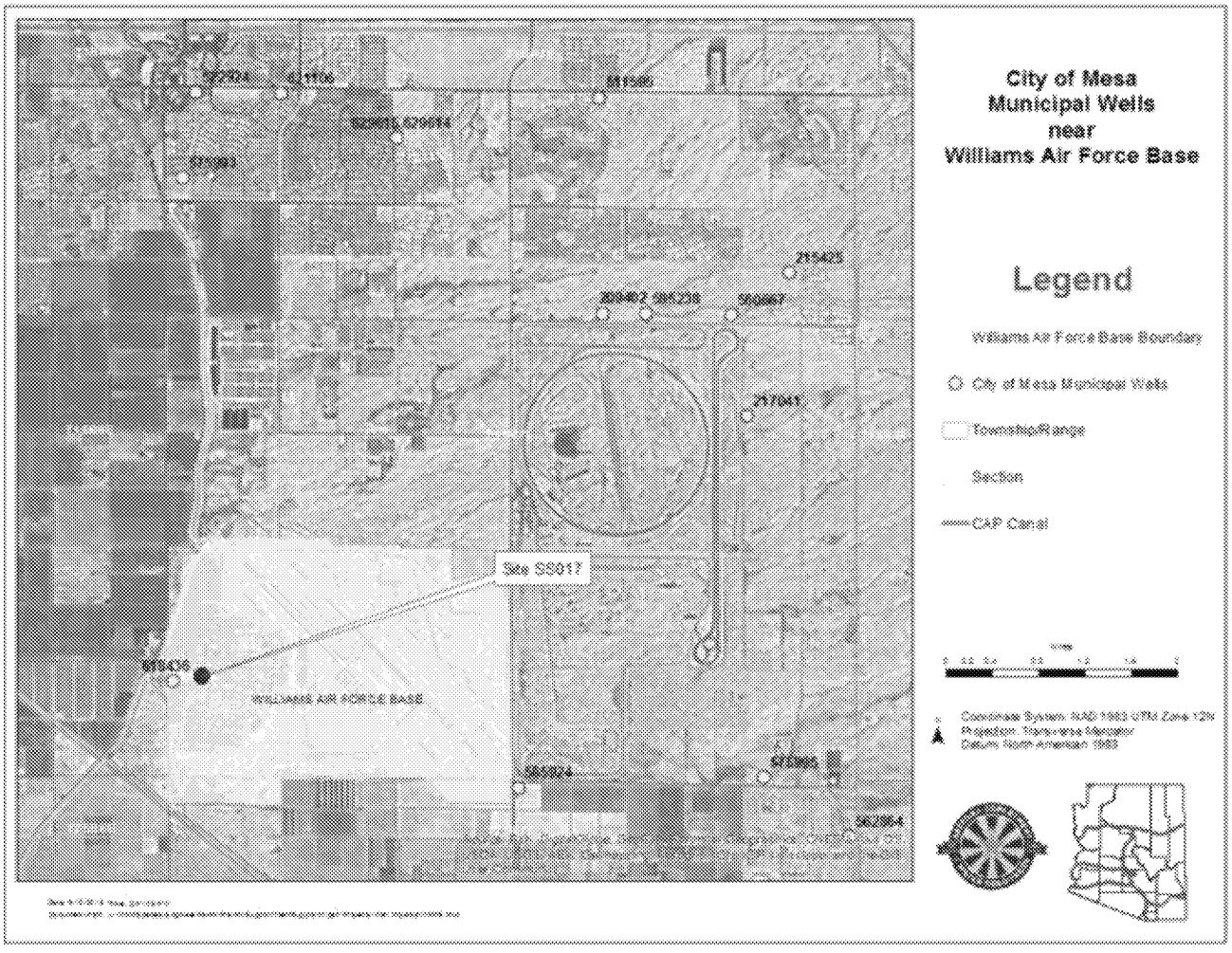
From: d'Almeida, Carolyn K. [mailto:dAlmeida.Carolyn@epa.gov]
Sent: Tuesday, May 23, 2017 1:45 PM
To: Cosler, Doug; Dan Pope; Davis, Eva; Bo Stewart; Henning, Loren; Brasaemle, Karla; Wayne Miller; Jennings, Eleanor; Steve Willis
Subject: RE: ST12 response
There are actually more wells even closer than the City's municipal wells



Carolyn d'Almeida
Remedial Project Manager
Federal Facilites Branch (SFD 8-1)
US EPA Region 9
(415) 972-3150
"Because a waste is a terrible thing to mind..."

From: d'Almeida, Carolyn K.
Sent: Thursday, May 18, 2017 4:39 PM
To: 'Cosler, Doug' <Doug.Cosler@TechLawInc.com>; 'Dan Pope' <DPope@css-inc.com>; Davis, Eva <Davis.Eva@epa.gov>; 'Bo Stewart' <Bo@praxis-enviro.com>; Henning, Loren <Henning.Loren@epa.gov>; 'Brasaemle, Karla' <Karla.Brasaemle@TechLawInc.com>; 'Wayne Miller' <Miller.Wayne@azdeq.gov>; 'Jennings, Eleanor' <Eleanor.Jennings@parsons.com>; 'Steve Willis' <steve@uxopro.com>
Subject: RE: ST12 response

This would be a useful figure from a prior dispute on Williams for developing modeled future plume maps for ST12. This also might explain the northeastern groundwater trend we've been seeing. Maybe we should ask ADWR or City of Mesa about pumping rates as input for fate and transport model?



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"Because a waste is a terrible thing to mind..."

From: d'Almeida, Carolyn K.
Sent: Thursday, May 18, 2017 3:06 PM
To: 'Cosler, Doug' <Doug.Cosler@TechLawInc.com>; 'Dan Pope' <DPope@css-inc.com>; Davis, Eva <Davis.Eva@epa.gov>; Bo Stewart <Bo@praxis-enviro.com>; Henning, Loren <Henning.Loren@epa.gov>; Brasaemle, Karla <Karla.Brasaemle@TechLawInc.com>; Wayne Miller <Miller.Wayne@azdeq.gov>; Jennings, Eleanor <Eleanor.Jennings@parsons.com>; Steve Willis <steve@uxopro.com>
Subject: RE: ST12 response

Thanks everyone for your efforts with this. I just got off of the phone from briefing Enrique. He is very interested in your model conclusions, but has a follow up question that will require additional modeling effort. He wants to know given the slow degradation rate predicted by the model, can we also link a transport model to show growth of groundwater plume over the predicted timeframe?

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"Because a waste is a terrible thing to mind..."

From: Cosler, Doug [mailto:Doug.Cosler@TechLawInc.com]
Sent: Thursday, May 18, 2017 12:16 PM
To: 'Dan Pope' <DPope@css-inc.com>; Davis, Eva <Davis.Eva@epa.gov>; Bo Stewart <Bo@praxis-enviro.com>; d'Almeida, Carolyn K. <dAlmeida.Carolyn@epa.gov>; Henning, Loren <Henning.Loren@epa.gov>; Brasaemle, Karla <Karla.Brasaemle@TechLawInc.com>; Wayne Miller <Miller.Wayne@azdeq.gov>; Jennings, Eleanor <Eleanor.Jennings@parsons.com>; Steve Willis <steve@uxopro.com>
Subject: RE: ST12 response

I added my edits to Eva's version (attached). I believe I addressed a few of her comments and a couple of Dan's. I regret that I wasn't able to add my comments to Bo's original version before sending out yesterday; hence, all of the red-line. (Bo also needs to make sure he is OK with the changes I made).
Maybe we need to an updated "clean" version for Dan to make some of his edits and for Eleanor to look at?
Doug

From: Dan Pope [mailto:DPope@css-inc.com]
Sent: Thursday, May 18, 2017 11:31 AM
To: Cosler, Doug <Doug.Cosler@TechLawInc.com>; 'Davis, Eva' <Davis.Eva@epa.gov>; Bo Stewart <Bo@praxis-enviro.com>; d'Almeida, Carolyn K. <dAlmeida.Carolyn@epa.gov>; Henning, Loren <Henning.Loren@epa.gov>; Brasaemle, Karla <Karla.Brasaemle@TechLawInc.com>; Wayne Miller <Miller.Wayne@azdeq.gov>; Jennings, Eleanor <Eleanor.Jennings@parsons.com>; Steve Willis <steve@uxopro.com>
Subject: RE: ST12 response

A couple of comments, most of which are not actionable, added to Eva's comments.

From: Cosler, Doug [mailto:Doug.Cosler@TechLawInc.com]
Sent: Thursday, May 18, 2017 8:56 AM
To: 'Davis, Eva'; Bo Stewart; d'Almeida, Carolyn K.; Henning, Loren; Dan Pope; Brasaemle, Karla; Wayne Miller; Jennings, Eleanor; Steve Willis
Subject: RE: ST12 response

I'm looking at this summary again this morning and will try to address as many of Eva's comments as I can.
Doug

From: Davis, Eva [mailto:Davis.Eva@epa.gov]
Sent: Wednesday, May 17, 2017 5:02 PM
To: Bo Stewart <Bo@praxis-enviro.com>; d'Almeida, Carolyn K. <dAlmeida.Carolyn@epa.gov>; Henning, Loren <Henning.Loren@epa.gov>; 'Dan Pope' <DPope@css-inc.com>; Brasaemle, Karla <Karla.Brasaemle@TechLawInc.com>; Cosler, Doug <Doug.Cosler@TechLawInc.com>; Wayne Miller <Miller.Wayne@azdeq.gov>; Jennings, Eleanor <Eleanor.Jennings@parsons.com>; Steve Willis <steve@uxopro.com>
Subject: RE: ST12 response

A few comments inserted in the document -

From: Bo Stewart [mailto:Bo@praxis-enviro.com]
Sent: Wednesday, May 17, 2017 2:48 PM
To: d'Almeida, Carolyn K. <dAlmeida.Carolyn@epa.gov>; Henning, Loren <Henning.Loren@epa.gov>; Davis, Eva <Davis.Eva@epa.gov>; 'Dan Pope' <DPope@css-inc.com>; Brasaemle, Karla <KBrasaemle@TechLawInc.com>; Cosler, Doug <Doug.Cosler@TechLawInc.com>; Wayne Miller <Miller.Wayne@azdeq.gov>; Jennings, Eleanor <Eleanor.Jennings@parsons.com>; Steve Willis <steve@uxopro.com>
Subject: Re: ST12 response

Hi All,

Attached is the summary that Doug and I came up with. I also added an outline and made some edits to make the memo a little more readable. That is also attached. Please comment on/edit the summary to make it more understandable. We added some interpretative language that does not appear in the memo to get the point across although held back adding that these time estimates are still optimistic as they assume the degradation goes flawlessly.

Bo

On 5/11/2017 3:48 PM, d'Almeida, Carolyn K. wrote:

d'Almeida, Carolyn K. has invited you to ST12 response

Title:	ST12 response
Location:	Dial-In Number(s): (866) 299-3188 Conference C 4159722020
When:	Tuesday, May 16, 2017 10:30 AM – 12:00 PM
Organizer:	d'Almeida, Carolyn K. <dAlmeida.Carolyn@epa
Description:	Dial-In Number(s): (866) 299-3188 Conference C 4159722020
Comment:	
Attendees:	Henning, Loren <Henning.Loren@epa.gov> Davis, Eva <Davis.Eva@epa.gov> 'Dan Pope' <DPope@css-inc.com> Brasaemle, Karla <KBrasaemle@TechLawInc.co Cosler, Doug <Doug.Cosler@TechLawInc.com> Wayne Miller <Miller.Wayne@azdeq.gov> Jennings, Eleanor <Eleanor.Jennings@parsons.c Bo Stewart <Bo@praxis-enviro.com> R9SF-ConferenceLine-SFD-Card2 <R9SF-ConferenceLine-SFD-Card2@epa.gov>

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